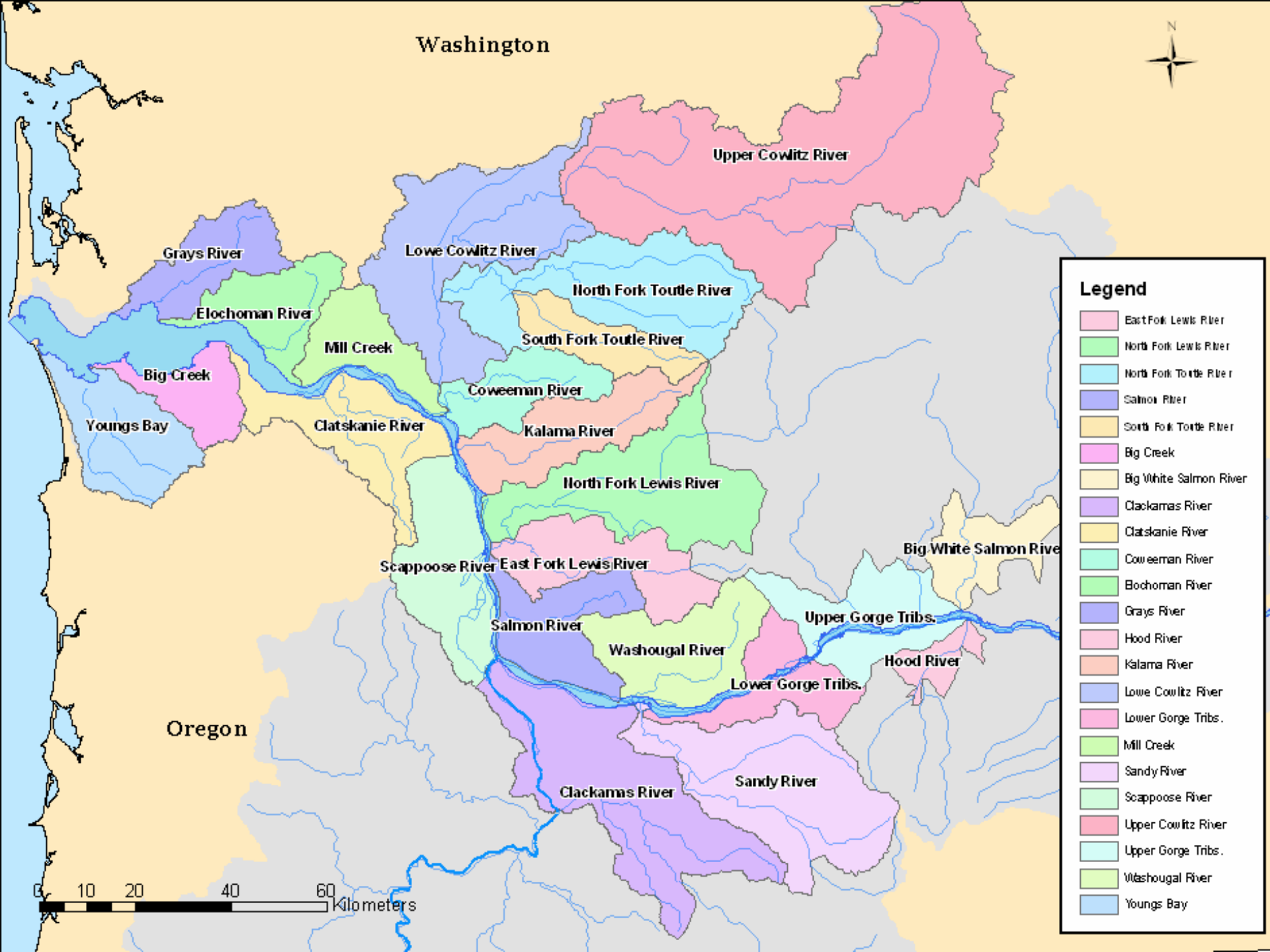
Lower Columbia River Coho Salmon ESU

Hatchery Program Assessment

Richard Turner
Salmon Recovery Division

Summary

- 23 Historic Coho Populations In ESU
- BRT identified only 2 naturally reproducing
- 34 Artificial Propagation Programs that release coho that are considered part of the ESU
- 1 Additional Program was terminated due to lack of funding.


Washington
Oregon
Upper Cowlitz River
Lowe Cowlitz River
Grays River
Elochoman River
Mill Creek
North Fork Toutle River
South Fork Toutle River
Big Creek
Youngs Bay
Coweeman River
Clatskanie River
Kalama River
North Fork Lewis River
Scappoose River
East Fork Lewis River
Salmon River
Washougal River
Big White Salmon River
Upper Gorge Tribs.
Hood River
Lower Gorge Tribs.
Clackamas River
Sandy River
0 10 20 40 60
Kilometers
Legend
East Fork Lewis River
North Fork Lewis River
North Fork Toutle River
Salmon River
South Fork Toutle River
Big Creek
Big White Salmon River
Clackamas River
Clatskanie River
Coweeman River
Elochoman River
Grays River
Hood River
Kalama River
Lowe Cowlitz River
Lower Gorge Tribs.
Mill Creek
Sandy River
Scappoose River
Upper Cowlitz River
Upper Gorge Tribs.
Washougal River
Youngs Bay

In ESU Artificial Propagation Programs

- Coho Salmon Program Releases:

  13,321,500 smolts

- Coho Salmon Fry Program Releases:

  1,237,500 fry

  Total coho releases in the Columbia River Basin have declined from 25 to 30 million in the 1980-90s to ~20 million presently

Historic TRT Population	**Artificial Propagation Programs releasing fish within Historic Population Areas**
Youngs Bay	Astoria High School (STEP) Coho Fry Program. (Big Creek Hatchery Coho).
	Warrenton High School (STEP) Coho Fry Program. (Big Creek Hatchery Coho)
	CEDC Coho Program – Youngs Bay (Bonneville and Eagle Creek stock)
Grays River	Grays River Type-S Coho Program
	Sea Resources Type-S Coho Program
	Peterson Coho Project Program (Sea Resources stock)
	Deep River Net Pens Type-S Coho Program
Big Creek	Big Creek Hatchery Coho Program
	CEDC Coho Salmon Program - Tongue Point/ Blind Slough (Bonneville and Sandy River stocks)
Elochoman River	Elochoman Type - S Coho Program
	Elochoman Type - N Coho Program
	Cathlamett High School FFA Type-N Coho Program
	Steamboat Slough Net Pen Type-S Coho Program
Clatskanie River	
Mill, Germany, Abernathy	

Historic TRT Population	**Artificial Propagation Programs releasing fish within Historic Population Areas**
Scappoose Creek	
Upper Cowlitz River	Cowlitz Type - N Coho Program
Lower Cowlitz River	Cowlitz Type - N Coho Program
	Cowlitz Game and Anglers Coho Program (fry releases in various locations)
	Friends of the Cowlitz Coho Program (fry releases various locations)
North Fork Toutle River	North Toutle Type - S Coho Program
South Fork Toutle River	
Coweeman River	
Kalama River	Kalama River Type-N Coho Program
	Kalama River Type-S Coho Program
North Fork Lewis River	Lewis River Type - S Coho Program
	Lewis River Type - N Coho Program
	Fish First Wild Coho Program (smolt releases and RSIs in Cedar Creek basin)
	Fish First Type - N Coho Program (fry releases with RSIs in North Fork basin)
East Fork Lewis River	

Historic TRT Population	**Artificial Propagation Programs releasing fish within Historic Population Areas**
Clackamas River	Eagle Creek NFH Coho Program
Salmon Creek	Clark PUD Type-N Coho Program (fry release, Washougal stock)
	Dist. 5 Firefighters Type-N Coho Program (fry release Washougal stock)
	Syverson Project Type-N Coho Program (fry releases)
Sandy River	Sandy River Coho Program
Washougal River	Washougal Type-N Coho Program
Lower Gorge Tributaries	Bonneville/Cascade/ Oxbow Coho Program
Upper Gorge Tributaries	Little White Salmon/Willard Type-S Coho (Terminated in 2004)
Big White Salmon River	
Hood River	

Non-ESU Artificial Propagation Programs

- Coho Salmon Program Releases:
  4,609,000 smolts
- Coho Salmon Fry Program Releases:
  160,000 fry

Total coho releases in the Columbia River Basin have declined from 25 to 30 million in the 1980-90s to ~20 million presently

Hatchery Listing Policy

Effects of hatchery fish on the likelihood of extinction of an ESU, depend on how hatchery fish affect four key attributes.

Effects on Abundance of ESU

- Program coho have increased abundance of coho spawning naturally
- Re-introduction programs in the Upper Cowlitz have produced NORs – 8,765 in 2003 and 2,890 in 2002 - program started in 1997
- Returns to the hatcheries in Washington averaged 171,000 and in Oregon 61,000 from 1999-2003

Effects on Productivity of ESU

- Uncertain if re-introduced coho salmon in Upper Cowlitz basin will be self-sustaining
- Many of the hatchery programs within the ESU have been self-sustaining
- Unknown what effect program fish have on productivity of naturally spawning populations

Effects on Spatial Distribution of ESU

- Hatchery programs have increased spatial distribution in the Cowlitz River basin
- Hatchery programs have supported spatial distribution with in the ESU

Effects on Diversity of ESU

- Hatchery programs represent the majority of the genetic diversity within the ESU
- Hatchery programs are providing adults that spawn naturally in basins within ESU
- Hatchery programs have proven to be able to produce returns
- Hatchery programs decreased diversity where hatchery fish from outside the population spawn naturally

Effect of Artificial Propagation on VSP Attributes

Viability Criteria	BRT VSP Risk Score	Decreases Risk	Neutral or Uncertain	Increases Risk
Abundance	4.4	√		
Productivity	4.2		√	
Spatial Structure	4.2	√		
Diversity	4.5	√		

Recommendation: Threatened